In the Claims:

1. (Currently Amended) A method for ~~discrimination of~~ discriminating metaplasias from neoplastic lesions in a biological ~~samples~~ sample in the course of cytological testing procedures comprising:

    a. determining the presence or absence of cells overexpressing at least one INK4a gene-product in said biological sample;

    b. determining the presence or absence of cells expressing at least one ~~further~~ different INK4a gene-product in said biological sample;

    c. assessing simultaneous presence of cells expressing two different INK4a gene-products or the presence of cells overexpressing only one INK4a gene-product alone;

    d. wherein the simultaneous presence of cells expressing at least two different INK4a gene-products is indicative for neoplastic lesions.

2. (Currently Amended) [[A]] The method according to claim 1, wherein said at least one ~~of the~~ INK4a ~~gene-products~~ gene-product or said at least one different INK4a gene-product has a molecular weight between 13 and 19 kDa.

3. (Currently Amended) [[A]] The method according to claim 1, wherein said at least one ~~of the~~ INK4a ~~gene-products~~ gene-product is $p16^{INK4a}$.

4. (Currently Amended) [[A]] The method according to claim 1, wherein at least one ~~of the~~ different INK4a ~~gene-products~~ gene-product is p14ARF.

5. (Currently Amended) [[A]] The method according to ~~any one of the preceding claims~~ claim 1, wherein ~~the INK4a gene-product~~ said at least one INK4a gene-product or at least one different INK4a gene product is a polypeptide or an RNA molecule.

6. (Currently Amended) The method according to ~~any one of the preceding claims~~ claim 1, wherein the neoplastic lesions are lesions of the anogenital tract.

7. (Original) The method according to claim 6, wherein the lesion of the anogenital tract is a lesion of the uterine cervix.

8. (Currently Amended) [[A]] The method according to ~~any preceding claim~~ claim 1, wherein the biological sample is a sample containing cells of anogenital origin.

9. (Currently Amended) [[A]] The method according to claim 8, wherein the cells are cells originating from the uterine cervix.

10. (Currently Amended) [[A]] The method according to claim 9, wherein the biological sample is a cytological or histological preparation of the cervix uteri.

11. (Currently Amended) [[A]] The method according to ~~any one of the preceding claims~~ claim 1, wherein the ~~detection~~ determination of the INK4a gene-products is performed using at least one probe specifically recognizing the ~~molecules to be detected~~ INK4a gene-products.

12. (Currently Amended) [[A]] The method according to claim 11, wherein the probe is detectably labelled.

13. (Currently Amended) [[A]] The method according to claim 12, wherein the label is selected from the group consisting of a radioisotope, a bioluminescent compound, a chemiluminescent compound, a fluorescent compound, a metal chelate, or an enzyme.

14. (Currently Amended) [[A]] The method according to ~~any one of the claims 11 to 13~~ claim 11, wherein the probe is a ~~protein and/~~ polypeptide or a nucleic acid.

15. (Currently Amended) [[A]] The method according to claim 14, wherein ~~at least one~~ the probe is an antibody directed against [[a]] an INK4a encoded gene-product.

16. (Currently Amended) The method according to claim 15, ~~which~~ wherein the determination of the INK4a gene-products comprises an immuno-cytochemical staining procedure.

17. (Currently Amended) The method according to claim 14, wherein ~~at least one~~ the probe is a nucleic acid specifically hybridizing to an INK4a gene-product.

18. (Currently Amended) The method according to claim 17, ~~which~~ wherein the determination of the INK4a gene-products comprises an in situ hybridization reaction.

19. (Currently Amended) The method according to claim 17, ~~which~~ wherein the determination of the INK4a gene-products comprises a nucleic acid amplification reaction.

20. (Original) The method according to claim 19, wherein the nucleic acid amplification reaction is PCR or LCR.

21. (Currently Amended) [[A]] The method according to ~~any of the preceding claims~~ claim 14, wherein ~~detection reactions~~ the determination of the INK4a gene-products is performed using nucleic acid probes and polypeptide probes ~~are carried out~~ simultaneously.

22. (Currently Amended) A ~~kit for performing the method according to any one of the preceding claims, which is a~~ diagnostic kit or a research kit, comprising at least one or more probes for ~~the detection of~~ detecting the presence or absence and/or the level of the overexpression of two or more INK4a gene-products in biological samples.

23. (Currently Amended) [[A]] The diagnostic or research kit according to claim 22, wherein the INK4a gene products are selected from ~~a group comprising~~ the group consisting of $p16^{INK4a}$ and p14ARF.

24. (Currently Amended) The diagnostic or research kit according to ~~claims 22 or 23~~ claim 23, furthermore comprising at least one of the following:

    a. a $p16^{INK4a}$ sample for carrying out a positive control reaction,

    b. a p14ARF sample for carrying out a positive control reaction,

    c. reagents for detection of the presence or absence and/or the level of $p16^{INK4a}$,

    d. reagents for detection of the presence or absence and/or the level of p14ARF,

    e. one or more samples of INK4a gene-products for carrying out positive control reactions, and

    f. and one or more reagents for the detection of the presence or absence and/or the level of other INK4a gene products.

25. (Currently Amended) An immunogenic peptide derived from a cell cycle regulatory protein encoded by an alternative reading frame of the INK4a gene locus~~, for use in detection and treatment of tumors~~.

26. (Currently Amended) The immunogenic peptide according to claim 25~~, wherein the peptide is~~ selected from [[a]] the group ~~comprising~~ consisting of:

a. a peptide~~, which may be predicted as being immunogenic,~~ from the amino acid sequence of the cell cycle regulatory protein;

b. an HLA-A3 restricted nonamer peptide;

c. an HLA-A2 restricted nonamer peptide;

d. an HLA-A*0201 restricted nonamer peptide; and

e. ~~or~~ a 15-mer peptide.

27. (Currently Amended) [[An]] The immunogenic peptide according to claim 26, wherein the peptide is selected from [[a]] the group ~~comprising the sequences given in~~ consisting of SEQ IDs No. 1-23.

28. (Currently Amended) ~~Use of one or more immunogenic peptides according to any one of the claims 25-27 for treatment of tumors~~ A method of treating tumors comprising the steps of administering to a subject in need thereof a pharmaceutical composition comprising one or more immunogenic peptides derived from a cell cycle regulatory protein encoded by an alternative reading frame of the INK4a gene locus.

29. (Currently Amended) ~~Use~~ The method according to claim 28, wherein the treatment is selected from ~~a group comprising~~ the group consisting of curative and preventive immunotherapy.

30. (Currently Amended) ~~Use~~ The method according to claim 29, wherein the immunotherapy is vaccination therapy.

31. (Currently Amended) ~~Use~~ The method according to ~~any one of the claims 28-30~~ claim 28, wherein the ~~tumor is~~ tumors are selected from ~~a group comprising~~ the group consisting of benign or malignant tumors, carcinomas, sarcomas, leukemias, ~~lymhomas~~ lymphomas and dysplasias.

32. (Currently Amended) ~~Use~~ The method according to claim 31, wherein the ~~tumor is~~ tumors are selected from ~~a group comprising~~ the group consisting of cervical cancer, lung cancer, gastric cancer, and colon cancer.

33. (Currently Amended) ~~Use~~ The method according to ~~any one of the claims 28-31~~ claim 28, ~~wherein furthermore~~ further comprising administering to the subject one or more other peptides derived from tumor associated proteins ~~are used~~.

34. (Currently Amended) A binding agent directed against the immunogenic peptide according to ~~any one of the claims 25-27~~ claim 25, selected from [[a]] the group ~~comprising~~ consisting of:

    a. a monoclonal antibody;

    b. a mini-antibody;

    c. an antigen binding fragment;

    d. an antigen binding peptidomimetic molecule; and

    e. ~~or~~ a polyclonal antibody

~~for use in detection and treatment of tumors~~.

35. (Currently Amended) A pharmaceutical composition comprising one or more peptides according to ~~any one of the claims 25-27~~ claim 25 and/or one or more binding agents according to claim 34 ~~for the treatment of tumors, wherein the tumor is selected from a group comprising cervical cancer, lung cancer, gastric cancer, and colon cancer and the treatment is selected from a group selected from a group comprising curative and preventive immunotherapy and vaccination therapy~~.

36. (Currently Amended) The pharmaceutical composition according to claim 35, further comprising ~~furthermore~~ one or more additional peptides derived from proteins, which show non wild-type expression in tumors.

37. (Currently Amended) The pharmaceutical composition according to claim 36, wherein the additional peptides are derived from proteins selected from ~~a group comprising~~ the group consisting of $p16^{INK4a}$, HPV E6, HPV E7, HPV E2 HPV E4, HPV L1, HPV L2, p27, p21, p15, p19, p53, pRb, and MDM2 ~~and peptides encoded by the genes disclosed in the documents WO9904265A2, WO0149716A2, WO0055633A2 and/or WO0142792A2~~.

38. (Currently Amended) A method for ~~detection of~~ detecting immunological entities specifically recognizing the ~~peptides~~ immunogenic peptide according to ~~any one of the claims 25-27~~ claim 25 in individuals comprising the steps of

    a. obtaining a sample from the individual;

    b. contacting the sample with a binding agent binding to said immunological entities selected from [[a]] the group ~~comprising~~ consisting of:

        i. a binding agent directed against said immunological entities,

        ii. a binding agent directed against complexes of the immunological entities together with the respective immunogenic peptides,

        iii. at least one peptide according to ~~any one of the claims 25-27~~ claim 25,

    wherein said contacting is performed in a way, that binding of the immunological entities to said binding agents gives rise to a detectable signal; and

    c. ~~and~~ assessing the presence or absence and/or the level of immunological entities in said sample from the presence or absence and/or the level of detectable signal.

39. (Currently Amended) The method according to claim 38, which is used for purposes selected from [[a]] the group ~~comprising~~ consisting of:

    a. monitoring in the course of a therapy using peptides according to claim ~~1-3~~ 1;

    b. monitoring in the course of the application of a pharmaceutical composition according to claim ~~35-37~~ 35; and

    c. monitoring in the course of ~~a use~~ the method according to ~~any one of the claims 28-33~~ claim 28.

40. (Original) The method according to claim 38, which is used for the diagnosis and monitoring of the disease course of tumors.

41. (Currently Amended) The method according to ~~any one of the claims 38—40~~ claim 38, wherein the sample is selected from ~~a group comprising~~ the group consisting of secretions, smears, body fluids, serum, blood, plasma, urine, semen, stool, bile, sputum, biopsies, cell-

and tissue-samples, resection samples of tumors, tissue samples prepared by endoscopic means and needle biopsies of organs.

42. (Currently Amendec) A ~~kit for performing the method according to claims 38 to 41 in the course of research studies or in the course of diagnostic procedures~~ diagnostic kit or a research kit, comprising one or more immunogenic peptides derived from a cell cycle regulatory protein encoded by an alternative reading frame of the INK4a gene locus or one or more binding agents directed against said immunogenic peptides.
43. (Cancelled).